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The California Forest Reservations.

IT is unnecessary, perhaps, to remind our readers that the reservations of the public domain made by the Government are of two classes: First, the so-called national parks, comprising the Yellowstone National Park, the Yosemite National Park, the Sequoia National Park and the General Grant National Park. These four parks comprise, together, about three million acres, the two last named, which are situated in Tulare County, California, having been established for the preservation of portions of the Sequoia forests. They are now all under the strict control and efficient protection of the army of the United States. Second, there are seventeen forest reservations, comprising, altogether, about seventeen million acres, or 26,500 square miles, a territory more than half the size of this state, and scattered from Alaska to Arizona, New Mexico, Colorado and Wyoming. These reservations have been withdrawn from sale and entry, but receive no more protection from fire, timber-thieves and sheep-herders than the non-reserved lands. The largest of the reservations, comprising nearly five million acres, includes, it will be remembered, the Cascade Mountain Range from the Columbia River nearly to the borders of California. An attempt is now being made, as was pointed out in these columns two weeks ago, to deprive this reservation of its value by opening a considerable part of it to entry. Next in extent is the Sierra Forest Reservation of more than four million acres, stretching along the southern Sierras for over two hundred miles, from the Yosemite National Park to the mountains east of Bakersville, with an average width of about fifty miles and containing the principal Sequoia forests.

Some interesting and reliable information concerning the actual condition of this reservation and of the Yosemite National Park is found in the seventh number of the *Sierra Club Bulletin*, which has just reached us. It contains the minutes of a meeting of the Sierra Club, a body of men interested in mountain exploration and in the forests of California, held November 25th, 1895, and, besides other matter, an address of the President, Mr. John Muir, and a report on the Sierra Reservation made by Professor William Russell Dudley, the distinguished botanist of the Leland Stanford, Jr., University. Mr. Muir, whose knowledge of the Sierras and the Sierra forest is unequaled, passed six weeks last summer, it appears, in the Yosemite National Park, about the headwaters of the Tuolumne, and his remarks on the results of the four years' protection the park had received from the Federal Government are important and encouraging. He says:

When I had last seen the Yosemite National Park region the face of the landscape in general was broken and wasted, like a beautiful human countenance destroyed by some dreadful disease. Now it is blooming again as one general garden, in which beauty for ashes has been granted in fine wild measure. The flowers and grasses are back again in their places as if they had never been away, and every tree in the park is waving its arms for joy. In what we may call homœopathic doses, the quiet, orderly soldiers have done this fine job, without any apparent friction or weak noise, in the still calm way that the United States troops do their duty. In my wanderings this summer I met small squads of mounted soldiers in all kinds of out-of-the-way places, fording roaring bowlder-choked streams, crossing rugged cañons, ever alert and watchful; and knowing, as we do, the extreme roughness of the topography of the park in general, our thanks are due these quiet soldiers for unweariedly facing and overcoming every difficulty in the way of duty. And always it is refreshing to know that in our changeful Government there is one arm that is permanent and ever to be depended on.

This testimony confirms what we have always believed, that the moral force exerted by a small troop of United States soldiers was capable of exerting an enormous influence in keeping marauders in the public reservations in check, and that by keeping out the sheep-herders soldiers could preserve the forests not only from the sheep, but from most of the fires which are set by the herders to improve the pasturage.

The observations recorded by Professor Dudley, who passed six weeks last summer in exploring the Sierra Forest Reservation and studying its condition, are equally instructive. The following is part of his report:

Where the sheep pass on the mountain slopes and summits, there, indeed, is the trail of destruction and death. Before them may be a pretty stretch tinged with hosts of red or yellow Mimulus. Behind them is the dust of a harrowed field. Before them may be a level meadow in the forest, such as none but an alpine sun ever shone upon; velvet-green is the tender grass, a thousand Asters of one form and color here, a thousand Dodecatheons of another form and color there, tiny rills of cold spring water dancing everywhere. Behind the herd are no flowers, the green grass has been reaped as by the reaper Death, the water is foul and festering. To pass from the trampled meadows of the reservation to the protected meadows of the National Park was a lesson in patriotism. The nation that could so effectively preserve the inoffensive plants, merely through the presence of a handful of its soldiers, was, indeed, a nation worth living for.

Professor Dudley, in the course of his journey, gathered a good deal of testimony from the mountain and foot-hill people in regard to the changes which had occurred during the past twenty years in the vegetation of the region which is now the Sierra Reservation. Their evidence all points to the fact that the undergrowth in the mountain forests has greatly decreased since they have been pastured by sheep. A horse can now be ridden through these high mountain forests, where twenty years ago it would have been practically impossible, on account of the underbrush, to have wandered from the beaten trails. The destruction caused by the sheep, which live on the young twigs of undershrubs and on annual plants, is greatly increased by herders who, in the autumn, on leaving the woods set fire to the undergrowth in order to insure an abundant growth of tender sprouts the following spring. Ranchmen and fruit-farmers of the valleys, who are dependent on the water of mountain streams, are now firm in the belief that the decrease in the undergrowth diminishes the flow of streams during the summer, considering, as is undoubtedly a fact, that the destruction of the underbrush has more effect on the stream-flow than the destruction of the large trees. The condition of White River is cited by Professor Dudley as proof of this general proposition. Formerly this stream is said

to have flowed in midsummer at least twenty-five miles lower than it does at present, being now dry almost to its source, 8,500 feet above the sea-level. Living springs once abounded on the ranches in the White River valley, which now all run dry in midsummer. There is hope for those who desire the preservation of the Sierra forests in the fact that the valley rancher detests the sheep-herder, whom he regards as a foreigner and a parasite, who intends to return sooner or later to France, or Portugal or Ireland, carrying with him his gains pilfered through sheep-raising on land not his own.

The condition of the woods on the reservation was often such as to cause Professor Dudley the greatest concern. Fires some time in the past have swept over a large part of it; not an old Sequoia has escaped fire, and most of the Pines and Firs bear evidences of the ravages of the flames. In the region south of Nelson's Fork of the Tule River the number of overripe or decayed Fir-trees is enormous, and these trees, dying apparently from old age, in falling are carrying down young trees and furnishing the best possible material for destructive forest fires. Professor Dudley was everywhere reminded of the lamentable contrast between America and Germany. The latter has forest schools and trained foresters, who cull out the ripe timber, remove and sell it for the Government. In America, whose forests are unexcelled in variety, beauty or value, we have no efficient system for preventing their destruction by fire, no schools for training a class of men to husband and develop the enormous forest resources of which we are the spendthrift heirs.

As a relief from this gloomy picture it is pleasant to learn from the testimony of ranchers and hunters that last summer there were probably not more than a third as many sheep in the Sierra Reservation as had invaded it the previous year, a decrease accounted for by the presence of the United States soldiers in the adjacent Yosemite National Park, which had alarmed sheep-herders and scattered their flocks.

In concluding his address Professor Dudley called the attention of the club to the fact that there are still large tracts of Redwood-trees standing in the coast-range region of California, and urged the establishment by the Government on unsurveyed lands of a Redwood reservation. This should be done, and done speedily, as we have more than once insisted. The Redwood is only inferior in size and interest to the Sierra Sequoia. Its value as a timber-tree and its accessibility doom it to destruction, and if the demand for Redwood lumber increases in the future as it has in the past, another generation will see the destruction of these peerless forests. The Redwood grows only on the California coast-ranges, and unless the Government will create a Redwood reservation, as it has a Sequoia reservation, the majestic trees which have been growing for two or three millenniums will be swept away forever.

We commend a careful study of this number of the Sierra Club's bulletin to all who are interested in the national forests and in the welfare of California. The address of the Secretary, Mr. Elliott McAllister, from whom probably copies can be obtained, is Academy of Sciences Building, San Francisco.

It is an unpleasant truth that, in spite of all that has been written and said on the necessity of forest protection in this country, the great mass of people still need to be instructed on this point, and since no comprehensive and efficient forest policy can even be devised without a more cultivated public sentiment, and since the best of laws would fail to be enforced without the quickening of the public conscience, every effort to arouse interest and disseminate knowledge on the general subject of forests, their uses and their management, is an occasion for gratitude as well as encouragement. We, therefore, commend, as an example to similar bodies, the action of the New Jersey State Federation of Women's Clubs at its recent meeting in Trenton.. A prominent place in the programme was given to an address on the "Forest Interests of New Jersey" by Mrs. Edward D. McCarthy, of Plainfield, who explained in a clear way the different forest conditions which prevail among the mountains in the northern part of the state, in the Pine plains of the south and on the shifting sands of the seashore, together with descriptions of the special beauties and uses of the woods of each region; and then gave convincing reasons for the adoption of a conservative forest policy in each. The history of the steady growth of sentiment in favor of good forestry throughout the country was graphically sketched, and then practical ways were pointed out in which women could reinforce the propaganda. Work was suggested through schools, libraries and public discussions; by offering prizes to school children, and having in every district exhibits of maps and photographs illustrating the results of wanton forest destruction and scientific forest management; by joining forestry associations; as clubs and classes by taking up a systematic study of the forest in its economical aspect, and, more than all, by the cultivation of a sympathetic love of trees and of natural beauty and order out of which will grow village improvement societies with forestry committees and the like. There is no doubt that Mrs. McCarthy was justified in the statement that if the women of New Jersey took hold of this matter in earnest, "within a year a State Forest Commission would be organized, a radical and practical fire policy would be so enforced throughout the state as to save the remnants of our forests, and courses of instruction would be founded which would teach us to value them and use them aright."

In connection with this address, and illustrating it, was an admirable exhibition in an adjoining chamber. This consisted of a series of maps, showing the forest reservations in the west and the forest area of New Jersey; large photographic views of the Palisades, in which nature and nature's defacement were contrasted; views to show the desolation wrought in various parts of the country by criminally careless methods of lumbering; pictures of the expensive engineering work in southern France, made necessary by stripping the mountains of their forest cover. Besides these, pictures of noteworthy trees and attractive landscapes and the instructive leaf charts of Grace Anna Lewis were disposed in an artistic way about the walls, while on the tables were pamphlets on tree-planting, forestry and village improvement, sample copies of periodicals devoted to forestry, a sheet for the registration of names of all who wished to enroll themselves as taking an interest in the subject, and a circular for distribution containing a brief list of books relating to forestry, village improvement and rural life. The arrangement of this exhibit was so effective that it seemed a pity that it must be transient, and the suggestion that every library and schoolroom should have something of this kind as a general help in the education of public sentiment was felt by all who saw it.

What Would be Fair Must First be Fit.

A constantly increasing number of Americans are desirous of securing some measure of beauty in the surroundings of their every-day lives. These people are not content with things as they are. They want more and more of pleasantness in and around their own houses and about their village, town or city as well.

To these earnest and inquiring people come a numerous company of writers and would-be missionaries, who, however, preach strangely differing gospels. First to appear are the gentlemanly agents of the commercial nurserymen. These bring many books of pictures of more or less lovely and rare plants, shrubs and trees, and say, "Look, you can make your surroundings beautiful if you will plant some of these interesting and lovely things. You ought to screen that ugly fence with Roses, scatter 'specimen ornamentals' about your grounds and put a bed of Cannas before your door." Next come the more pretentious

landscape-gardeners, who prescribe curves for paths and other approaches as being more "natural" than straight lines, and then propose plantations to fit or account for the curves. These gentry talk much about Nature and affect to consider formal treatment of ground and planting a sort of profanation. They are of many schools, for some will urge the planting of Purple Beeches, Blue Spruces and all manner of exotics, while others say, "You will do well to use few but wild native shrubs. What can be lovelier than this wayside group of Red Cedar, Bayberry and Wild Rose?" Thirdly, come the modern American architects, whose technical training has been acquired at the Parisian Ecole des Beaux Arts. These hold up their hands in holy horror at the landscape-gardeners of all schools, and say to the inquiring public, "Let us show you how wrong these men are! What you really need to make your surroundings beautiful are straight avenues, terraces and balustrades, a 'rampe douce' at your door and a sun-dial in an old-fashioned garden."

This is no fanciful picture of the strange conflict of modern doctrine concerning beauty in the surroundings of daily life. It is no wonder that the inquiring public is bewildered. Controversial papers and books are continually appearing. Bad language is employed by all parties, but the modern architects appear to be decidedly the most skilled in its use. Such adjectives as asinine, silly and ridiculous are not uncommon in the writings of Messrs. Blomfield, Thomas and Seddings, who, however, are English and not American controversialists.

How absurd all this quarreling seems when once a moment can be obtained for sober reflection. Is beauty, as a matter of fact, often won by following shifting fads or fashions, by heaping up decorations, by gathering architectural or botanical specimens, however remarkable or even lovely? On the contrary, it is by wrong-headed attempts to win beauty in these impossible ways that the ignorant rich and their imitators so often succeed in putting pretentious ugliness in place of simple loveliness and charm; witness the greater part of Newport and many another once pleasing region now sophisticated and destroyed.

Little or no thought being given to the fundamental arrangement of lands and buildings for convenience and beauty, an attempt is often made to retrieve the situation by adding decorations, such as statues, fountains and bridges, or, more generally, a selection from the marvelous products of modern nursery gardens. In those rarer cases where some real attention is devoted to the all-important fundamental arrangement, the design is apt to be strictly limited by the supposed requirements of the particular style of treatment which may be selected. The picturesque, the gardenesque and the formal styles are soberly discussed; but selection is apt to be made according to fancy merely, and the results, as in the first-mentioned class of cases, are generally amusing or striking rather than beautiful. A house scene filled with irrationally curved paths is seldom lovelier than one which is decked with a collection of contrasting specimens. A private country house approached by an unnecessary triple avenue and fitted with steps and terraces broad enough for a state capitol is equally amusing in its way.

The cause of the failure to attain to beauty in these and all similar cases is doubtless the same; it is (is it not?) the common lack of rationality at the foundation.

How is it that so much of the natural scenery of the world is beautiful and that so many myriad kinds of living things are lovely? The fact may not be explicable, but "it is one of the commonplaces of science that the form which every vital product takes has been shaped for it by natural selection through a million ages, with a view to its use, advantage or convenience, and that beauty has resulted from that evolution."

How is it that so much of the humanized landscape of the world is lovely? Is not the same natural law at work here also? The generations who by their arduous labor made the scenery of Italy, England and the valleys of New England what each is to-day

> wrought with a sad sincerity.
> Themselves from God they could not free,
> They builded better than they knew,
> The conscious (earth) to beauty grew.

In New England, for example, the hard-worked men of the last century cleared and smoothed the intervales, left fringes of trees along the streams and hanging woods on the steep hillsides, gathered their simple houses into villages and planted Elms beside them, for "use, advantage and convenience" merely, and yet beauty is the result. Truly,

> this is an art
> Which does mend nature, change it rather;
> But the art itself is nature.

The moral to be taken to heart by the sophisticated and self-conscious seekers after beauty in our present day is obvious. Success in achieving the beautiful is to be hoped for only when we bow to the law of nature and follow in the appointed way. Special purpose is the root, and fitness for purpose the main stem, of the plant of which beauty is the flower. As William Wyndham wrote to Humphrey Repton, "lands should be laid out solely with a view to their uses and enjoyment in real life. Conformity to these purposes is the one foundation of their true beauty."

Thus, the right planning of the arrangement of lands for private country-seats or suburban houses, for public squares, playgrounds or parks, for villages or for cities, is not a question of "the gardenesque" or "the picturesque," "the artificial" or "the natural," "the symmetrical," or "the unsymmetrical." Whoever, regardless of circumstances, insists upon any particular style or mode of arranging land and its accompanying landscape, is most certainly a quack. He has overlooked the important basal fact that, although beauty does not consist in fitness, nevertheless all that would be fair must first be fit. True art is expressive before it is beautiful; at its highest it is still the adornment of a service.

The modern practitioners of renaissance architecture need especially to be reminded that they have not a monopoly of the lovely. "Symmetry is beautiful, but so, also, is the unsymmetrical relation of the parts to a whole in Nature." Since all natural landscape, save that of the plains and the oceans, is unsymmetrical, it follows that humanized landscape is also generally and fittingly informal. Such landscape properly becomes symmetrical or formal only occasionally and for good reasons. The roads of a hilly park rightly curve to avoid obstacles or to secure easy grades; but a particular spot within that park, intended for the gathering place of crowded audiences at band concerts, is rightly graded evenly and symmetrically and shaded by trees set in rows. Again, the fields and woods of a country-seat are rightly disposed picturesquely, while those outdoor halls and rooms of the mansion called the terrace and the flower-garden are just as rightly treated formally and decoratively. The naturalists are justified in thinking formal work often impertinent and out of place. The formalists and the decorators are justified so long as their work is rooted in usefulness and adaptation to purpose. "Each has its proper situation; and good taste will make fashion subservient to good sense," wrote Humphrey Repton. It is to be hoped that our quarreling faddists may take to heart this saying, and may turn themselves to the advancement of Repton's real and much needed art of arranging land, vegetation, buildings and the resultant landscape for the use and delight of men.

Brookline, Mass. *Charles Eliot.*

Salt and Sugar in Washingtonia filamentosa.

RECENTLY, while examining this Palm for tannin, I was impressed by the sweet and salt taste of the fresh tissue. Less than one per cent. of tannin was found, but, as the specimen contained 68.97 per cent. of moisture, this raised the amount of tannin to 2.73 per cent. when calculated for absolutely dry substance. The quantity is too

small, however, to give the tree any value on account of its astringency.

Attention was then directed to the sugar content of the specimen with better results, for the amount found, when calculated for dry substance, was 15.50 per cent. Since this amount was not materially increased by first treating the infusion with acid, it was probably a glucose sugar.

The ash in the absolutely dry specimen was found to be

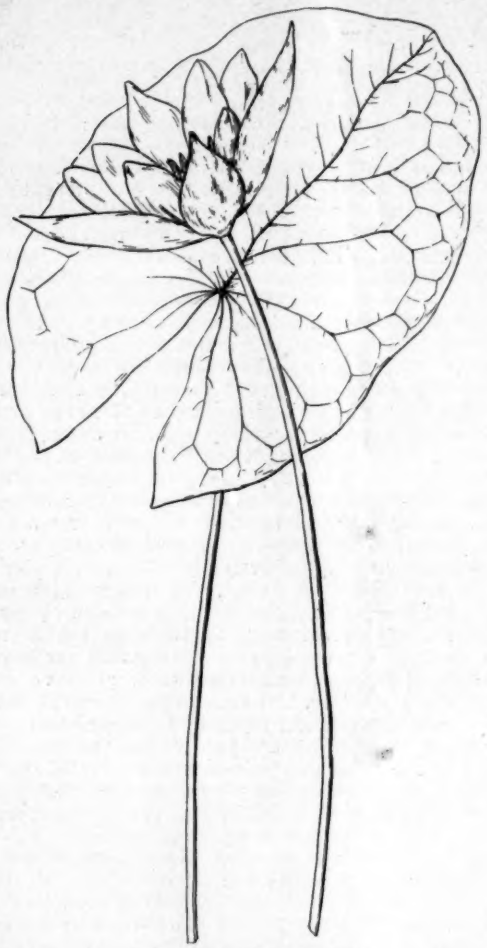

Fig. 16.—Nymphæa tetragona.

11.86 per cent., over one-fourth of which was sodium chloride (common salt), the actual amount of salt being 3.09 per cent. of the dry substance of the Palm. The locality in which the tree was grown might have had something to do with the amount of salt present.

The specimen analyzed was a cross-section of the trunk at the base of the leaves, and in the fresh state was sufficiently fleshy to be easily cut with a knife, but in drying it became hard and woody.

It was received through the kindness of Dr. F. Franceschi, of Santa Barbara, California.

College of Pharmacy, Philadelphia, Pa. *Henry Trimble.*

New or Little-known Plants.

Nymphæa tetragona, Georgi.

PROBABLY the earliest figure of this small but attractive Water-lily is that of Gmelin in his *Flora Sibirica*, iv., t. 71 (1769). The woodcut which he gives as Nymphæa alba minor, although rather stiff and crude, is unmistakably of this plant. Georgi's name, N. tetragona, used in 1775 in his *Bemerkungen einer Reise im Russischen Reiche*, i., 220, is apparently the first published binomial for the species, although from Sims (*Bot. Mag.*, xxxvii., under t. 1525) we learn that Pallas had found the same plant in his Siberian travels, and called it tetragonanthos, a name probably unpublished until mentioned by Sims. Both specific names allude to the quadrate form of the floral receptacle or even of the flower itself.

In his *Paradisus* (t. 68) Salisbury named and figured a Castalia pygmæa, a native of China. This was later transferred to Nymphæa by the younger Aiton as one of his unnamed collaborators (*Hort. Kew*, ed. 2, iii., 293 [1811]), and Sims, who in the *Bot. Mag.*, xxxviii., t. 1525, gives an excellent representation of it, admits in his synonymy that the Chinese plant is identical with the older Siberian N. tetragona, to which it is now generally reduced.

Our knowledge of Nymphæa tetragona as an American plant is comparatively recent, dating from 1888, when Dr. Morong characterized and figured (*Bot. Gaz.*, xiii., 124, t. 7) as Castalia Leibergi what he regarded as a new species from northern Idaho. The types had been secured by Mr. John B. Leiberg in a small pond near Granite Station, on the Northern Pacific Railway. It requires, however, no specialist in aquatic plants to see from Dr. Morong's plate, above cited, that he had before him the flowers of a Nymphæa with the pinnately veined leaves of a Nuphar. A careful study of some of his type material not only confirms this view, but shows that the Nymphæa is identical with the Asiatic N. tetragona, Georgi. In 1890 Professor Macoun stated (*Cat. Canad. Pl.*, v., 300) on the authority of Professor Britton that N. tetragona had been found in the Misinaibi River, in northern Ontario, by Dr. Robert Bell, and in ponds along the Severn River, Keewalin, by Mr. James Macoun. These plants appear to be the same which Lawson (*Trans. Roy. Soc. Canad.*, ser. iv., 1888, 113) erroneously referred to Castalia odorata, var. minor.

With our present knowledge of its distribution, Nymphæa tetragona (see figure 16 on this page) appears to be rare and local in America, but between its widely separated occurrences in north Idaho and north Ontario future and more careful exploration may well show a number of intermediate stations.

Gray Herbarium, Cambridge, Mass. *B. L. Robinson.*

Canna Italia.

ON page 520 of vol. viii. of this journal we quoted from an article by Monsieur Edouard André an account of a new race of what he called Italian Cannas, which had been produced by Messrs. Dammann at their grounds near Naples. It was said that a member of the firm, having concluded that he could produce nothing novel by continual interbreeding of the large-flowered varieties, determined to introduce some new blood and began to experiment with Canna flaccida as one of the parents. This species is a native of the southern United States, of medium height, with large flowers, in which one of the petals is specially developed. The first success was achieved from seed of Madame Crozy with a fine variety of C. flaccida as the pollen parent. The result was a plant named Italia, the flower of which was said to be of unusual size, of a golden vermilion color and peculiarly opened or flattened so as to resemble the flower of Kæmpfer's Iris. One of the flowers of Italia figured in *The Gardeners' Chronicle* was said to have been five and three-quarter inches across.

This new Canna has recently flowered with F. R. Pierson & Co., of Tarrytown-on-the-Hudson, and although the color of the flower does not exactly coincide with Monsieur André's description, the plant is certainly most interesting, and the flowers have a singular and striking beauty. An illustration of a truss of these flowers from Mr. Pierson's plant, reduced to less than half the natural size, will be found on page 135. It will be seen that the petals are unusually broad, and that two of the inner ones are held above the three outer ones a trifle, thus producing something of the effect of a double flower. In this arrangement it differs from that of any other Canna with

which we are acquainted. The general color-effect is rather yellow than vermilion, the outer petals being almost entirely yellow, with a pleasing shade of carmine at the centre, and the inner ones almost entirely carmine, with a narrow margin of yellow, while a distinct satiny lustre adds to the richness of the combination. The flowers when fully open are about six inches across, larger than those of the best of the American seedlings. Perhaps the truss will not be as large and full as those of some of our seedlings, but the second trusses of Mr. Pierson's plants were considerably larger than the one in our illustration, and held well up on a long stem. The flowers of Canna flaccida are rather frail, and it is therefore possible that this hybrid may lack substance, but this is only conjecture, as it has not yet been grown here out-of-doors. The foliage is a light green, and the plant seems to be of taller habit than most of the Crozy seedlings.

Plant Notes.

North American Plums.

THE value of some of the North American Plums as ornamental plants is hardly appreciated yet by the planters of parks and large gardens. Of the species of the eastern and northern parts of the country the Canada Plum, Prunus nigra, is the earliest to flower; this is a tree which, under favorable conditions, occasionally attains the height of thirty feet, with a short stout trunk separating into a number of upright ridged branches armed after their first year with short, lateral, spur-like branchlets. The fragrant flowers appear in New England late in April or early in May, before the leaves, and completely cover the head of the tree; they are about an inch and a quarter across, with pure white petals, which turn reddish purple as they fade, and are borne on slender dark red pedicels. This is the native Plum which is so often planted as a fruit-tree in Canadian gardens, and is sometimes found naturalized by roadsides in northern New England, where it is supposed to have been introduced by the Indians.

Even more beautiful is the Wild Plum of the middle states, the Prunus Americana of botanists, which is distinguished from the Canada Plum by its long, slender, pendulous branches, which form a wide, graceful head. This tree does not expand its flowers until after the petals have fallen from the Canada Plum, and the flowers are smaller and often do not fade until after the young leaves have begun to unfold. A well-grown specimen of this tree covered with flowers is an object of extreme beauty, and the only objection to it is the rather disagreeable odor which the flowers emit. Left to itself the Canada Plum produces numerous suckers, so it is usually found in dense broad thickets of many stems, but with the aid of a little judicious pruning and attention it can be made to grow into a shapely tree, often more than thirty feet high. It is most ornamental, too, in early autumn, when the branches are borne down with its abundant crops of small fruits, which, after they have attained their full size, are orange-color, with bright cheeks, later becoming bright red.

Very useful, too, as an ornamental plant is the Beach Plum, Prunus maritima, which, in cultivation, grows to a much larger size than it often attains in its home, close to the sea; as a garden plant this shrub covers itself early in May with innumerable small white flowers, which wreath the branches from end to end and have the merit of lasting in perfection for a considerably longer time than those of many other Plum-trees. The fruit, too, varies much in size, in edible quality and in color, being occasionally a clear amber, instead of the usual purplish red.

These three Plums can be easily raised from seeds; they grow rapidly and are perfectly hardy and not very particular about soil. Among the early-flowering trees in the shrubberies of the Arnold Arboretum none have excited so much admiration during recent years as a number of large specimens of Prunus Americana, which flower with remarkable profusion.

Cultural Department.

Cyclamens from Seed.

THE Cyclamen may be grown to perfection in an ordinary window without bottom-heat, and with as little trouble as would be given to a seedling Geranium, and those who never have grown it from seed have no idea of the ease with which it may be brought to flowering size. Success with these plants is possible if a seed is put here and there in the soil where other window plants are growing, and the young seedlings are removed as soon as they are large enough to bear transplanting.

If it is desired to bring the plants to blooming size as early as possible, the seed should be sown as soon as ripe—which will be in late winter or early spring—in shallow seed-pans or boxes, in a soil composed of leaf-mold, well-decayed stable-compost, and somewhat coarse sand in about equal parts and thoroughly mixed. Glass may be laid over the top of the box to assist in keeping the surface of the soil moist. The seeds will germinate in from fifteen to twenty-five days. The first leaves are nearly round, dark green above and of a dull reddish hue on the under side and cannot easily be mistaken for anything else. The later leaves are heart-shaped, and are mottled or marked on the upper side with grayish green.

Fig. 17.—Hybrid Canna Italia—reduced.—See page 134.

As soon as the seedlings have made the third leaf they should be transplanted into other pans or boxes of similar soil, disturbing the roots as little as possible, and they may be moved again, if necessary, before September or October, when they should be placed in the pots in which they are to bloom. The seedlings should have plenty of light, but when

young they should be shaded from the direct rays of the sun. The bulbs should be set with the crown or upper part even with or a little above the surface of the soil. In all transplanting or repotting of this bulb the roots must be disturbed as little as possible.

For the first six months the bulbs grow slowly, but afterward they increase in size more rapidly, and will bloom—if it is their season of bloom—when about one inch in diameter; and will increase in size and blooming power as they grow older. A mature bulb, say three inches in diameter, will bear hundreds of flowers in a season, producing from twenty-five to fifty at once, and continuing to bear thus lavishly for about three months each season.

The Cyclamen comes into flower in January or December, though seedlings at their first blooming season may be somewhat later than this, and they will bloom if they have been well cared for when a little less than a year old. The plants require considerable moisture, but the soil should not be be kept wet,—that is, not saturated with water. Excessive moisture would be fatal to the seedlings. Neither must they be allowed to become dry, or their growth will be checked. They do not require great heat. An even temperature of about sixty degrees will produce the best results. During the summer the seedlings may be kept upon a porch, or on the north side of the house where they will get the morning sun only. They should be washed or sprayed occasionally to keep down the red spider, which sometimes attacks them.

The plant has a neat, dwarf habit of growth, and bears its flowers, which are white, pink blush, red, or striped and mottled, on slender stems well above the foliage. After blooming, the bulbs require a season of rest, and water should be partially, but never wholly withheld, until it is time to repot them, in late summer, for winter use.

This plant is best propagated from seed, though some have succeeded in growing it from large leaves. The stem of the leaf is placed in water in a sunny window, and after a time a small bulb may form on the end of the stem, which is then transferred to suitable soil and treated as a seedling.

Seedlings do not always resemble the parent plant in the color of their flowers, and often new and valuable varieties are produced. It is this element of chance that helps to make the growing of bulbs from seed such a fascinating pastime.

Considering the number of its flowers the Cyclamen does not seed freely. When the seed is ripening the stalks bend or curl down until the seed-pod rests on the soil.

South Kankanna, Wis. *Beth Day.*

Hippeastrums.

SOME new Hippeastrums, now in bloom in the greenhouses of H. H. Hunnewell, Esq., Wellesley, Massachusetts, are remarkable for immense size and fine coloring. They came from Messrs. Veitch, of London, and the selection being left to them there is no doubt they represent the highest attainment of the hybridists' art up to this time. They are certainly great improvements on the older kinds. These novelties are altogether free from the green lines and reticulation on the petals so commonly seen in the earlier hybrids. Messrs. Veitch grow their plants in houses specially constructed for them. They are potted or top-dressed, as need be, immediately after the flowers fade. They are continued in a fairly high temperature, with abundance of water—manure-water alternating frequently, until the annual growth of leaves is fully matured. After this less and less water is given; but it should never be altogether withheld. The leaves will fade away, but may not do so entirely. Some hybrids remain with considerable green all the year round, and common sense suggests that these have slightly more water. Hippeastrums respond to artificial hybridization so freely that several gardeners hereabout are growing large numbers of them with pleasing results; for while they may get few which come up to the highest standard, there are, nevertheless, many highly decorative varieties which are useful at all times in winter. These seedlings are grown without rest until they bloom. The majority will bloom at two years, but probably the better varieties will need to be grown three years before they flower. Where a special house is provided, cocoanut fibre or litter is used as a plunging material. These imported varieties had made roots over the edges of the pots during last season's growth. In houses specially constructed for them it makes no difference whether the roots are in the pots or outside, for the plants bloom where they grow. With our facilities it is different; where no general collection is grown no special culture can be given.

Hippeastrum Johnsoni is one of the earlier hybrids. Although the flowers are small, by comparison, it is still a handsome kind. A neighbor who grows it largely for market succeeds well by plunging the deep flats in which he grows them out-of-doors for the summer. This suggests the idea that raising Hippeastrums might become part of the bulb industry proposed for the south. Some few are already offered by Californian growers, but, as far as I have seen, they are quite common kinds. A few of the choicest types should be imported as a basis to work on. My experience with the few I have is that they are hardier than is generally supposed. By an oversight some pans were left out last year until the middle of November. What few leaves remained were cut off at once, but the bulbs were uninjured, and they have flowered well this winter.

Mr. F. L. Harris, gardener of Mr. H. H. Hunnewell, exhibited a collection of Hippeastrums at a recent meeting of the Massachusetts Horticultural Society, and received honorable mention for them. The most noteworthy were Calabar, scarlet, with orange shading and crimson reticulation. The flowers were eight inches across and finely recurved. Olympia resembles Calabar, except that the markings are better defined. The flowers are equally as large, but not so finely formed. Madonna is a most chaste and beautiful variety. It is creamy white, with light scarlet pencilings. The petals are wavy and finely revolute. Fresca is crimson, with maroon lines and reticulation. It is the best of all the dark-colored varieties. The flowers are eight inches across and beautifully formed. Cupid is the gem of the group. The flowers are creamy white, with a heavy reticulation of crimson. They measure six inches across and are finely formed. The habit is dwarf, and the plant bore two large scapes of four flowers each, in a seven-inch pot, showing high culture.

Wellesley, Mass. *T. D. Hatfield.*

Seasonable Suggestions.

ALTHOUGH April is close at hand, winter still reigns, and practically nothing has been done in the garden. We might attempt some pruning, but, with the exception of Grape-vines, which should be pruned before the frost leaves the ground, it is better to leave shrubs until the weather is settled. Especially where the ground is heavy, much harm may come from treading on it. Roses of the Hybrid Perpetual kind will need cutting below the frozen growth. In varieties such as La France and other hybrid Teas it is best to leave on as much sound growth as possible, and Paul Neyron, Ulrich Brunner, Marie Baumann and the majority of sparsely thorned varieties also. As a rule, the heavily thorned varieties will bear harder pruning. The Prairie Rose, Scotch, Persia, Dawson and rambling Roses, such as the Multiflora group, need no more pruning than is required to clean off decayed growth. Hydrangea paniculata and all other flowering shrubs which bloom on the current year's growth may be spurred well in, and Yellow-barked Willow and Red Dogwood will be brighter in the autumn if pruned yearly; but spring-flowering shrubs should not be touched until past blooming, beyond clearing away dead growth, and, in fact, this is all that is necessary at any time. Climbing plants need looking over and bare spaces covered. Wistarias which have covered their allotted space should not be allowed to develop useless canes. All slender spiny shoots with light-colored bark must be cut away. Clematis paniculata may be cut back to within five or six feet of the ground and tied into shape. This yearly pruning keeps the vines well clothed below, where there would be only congested growth from the live tips. All planting of trees and shrubs should be done early, as drought too often quickly follows the breaking of winter. There should be at least a yard of good loam to every plant, and this can only be counted upon to last a year or two, before the area of deep soil will need extension. If herbaceous borders need replanting or filling from the reserve garden this work must be done at once. The common practice of digging borders in spring is objectionable. It is a work needing extreme care, and is seldom done in a satisfactory way. We only clear away leaves and litter remaining from the top-dressing of manure lain over winter. The rock-garden is still frost-bound and covered with pine-needles, but as soon as practicable it will be cleaned and receive a top-dressing of lawn fertilizer. This mixture we have found to answer perfectly, having discarded barnyard-manure in its favor. The latter carries too many weed-seeds, and as only hand-weeding is practicable, the work of keeping the place clean is quite tedious.

Spring-bedding must be prepared for. Pansies, Forget-me-nots, Silene pendula and Daisies are used in masses with better effect than in mixed beds. Dutch bulbs have been used, but these are short-lived and seldom satisfactory, as it is hardly

possible to get a perfect bed. Later we have special effects in nooks and corners of the shrubberies, with Foxgloves, Canterbury Bells, Sweet Williams, Larkspurs and Hollyhocks.

Wellesley, Mass. *T. D. Hatfield.*

Dendrobiums at the Harvard Botanic Garden.

DENDROBIUM SECUNDUM deserves mention as the most distinct species of this showy genus, in bloom here at present, although its flowers are not as gorgeous or as delicate in color as those of many other species. It is an erect plant, its stoutest stems being about twenty inches high and three-fourths of an inch in diameter. The young stems of last summer's growth are clothed with ovate leaves three or four inches long and an inch and a half in breadth. The flowers are produced in racemes, are four inches or more in length, from the upper part of the leafless one or two-year old, or even older stems. The small rosy purple flowers, about fifty or sixty in number, are arranged thickly along one side of the rachis. The sepals and the slightly smaller petals are ovate, the lip a lighter shade of color than the other parts of the flower, with an orange blotch at the apex. The spur is long and rather broad and blunt. A plant carrying several racemes is very striking, and, although the flowers are small, they last in good condition for several weeks. It does well planted in a pot, using fern-root and sphagnum as a compost. During the summer it is grown in the stove, and when its pseudo-bulbs have grown their full length water is withheld by degrees and it is shifted into a cooler and drier house, suspended near the roof-glass, and with only enough water to keep it from shriveling. When the racemes begin to show on the upper part of the stems it is taken back and treated more liberally. If it needs shifting into another pot this is done after the plant has flowered.

Another distinct species in bloom now is Dendrobium aggregatum. It is a dwarf evergreen plant, growing some four inches high, with oblong-ovate pseudo-bulbs two inches in length. The loose pendulous racemes of yellow flowers, produced from the side of the pseudo-bulb, are six inches long, and made up of ten or twelve flowers. When the plant blossoms well the light and graceful racemes hide the sides of the basket. The flowers are golden-yellow when they open, but in a few days they turn to an orange-yellow. This Dendrobium is usually cultivated on a bare block of wood, but here we grow it in a small shallow basket, using fibrous peat for a compost. It is kept during summer in the warmest house and needs liberal watering and frequent syringing. When the pseudo-bulbs are full grown less water is needed, and late in the fall it is removed to a cooler house, where it rests until the flowering season. With the above treatment it produces an abundance of flowers every year. It was introduced into English gardens from India more than sixty years ago.

The handsomest yellow-flowered Dendrobium in bloom is D. fimbriatum oculatum. This is a strong upright grower, its long cane-like pseudo-bulbs attaining a height of nearly three feet. The upper half of the stout stems when young is clothed with green leaves, which are six inches long. The flowers are produced from the ripened stems in drooping racemes, which contain from half a dozen to a dozen blossoms. The individual flowers measure two inches or more across and are of a rich orange-color, with a deep maroon-purple spot at the base of the lip. The lip is the most conspicuous part of the flower; it is margined with a deep golden-colored fringe. If the flowers are kept dry and not too much moisture in the house they last two or three weeks. This Dendrobium is planted in a deep basket in fern-root and sphagnum and suspended near the roof-glass. When it is making its new growth it requires stove-heat and abundance of water. After it has completed its season's growth it requires to be kept dry and in a slightly cooler temperature until it begins to show flowers.

Dendrobium superbum is a fine species, easy to grow and flowers freely every spring. It does best in the stove, in a basket suspended near the roof-glass during the summer months. After it has completed its growth it needs a good rest in a slightly lower temperature, and in a position where it can get all the light possible. This is a strong-growing, drooping, deciduous plant, and has stout pseudo-bulbs nearly a yard long, with oblong lanceolate leaves five inches in length. The pale purple flowers are large, measuring three to four inches across, and are produced in pairs from the joints of the new growth. They last well and the plants are handsome for some time.

Some of our plants of Dendrobium chrysanthum are in bloom now, but on a number of them the buds are just beginning to show on the long pseudo-bulbs. This Dendrobium is treated differently from the other species mentioned in these notes. It is grown in the stove the year round, as it rejoices in heat and moisture. When the pseudo-bulbs have finished growing less water is needed, but at no time is the water withheld long enough to permit the compost to become quite dry. It is one of the easiest species to grow when properly treated. Some of the pseudo-bulbs are nearly four feet long and a mass of golden flowers. The only deficiency the plant has is that its flowers do not last long. It does best when grown in a basket suspended from near the roof, where its long graceful stems will show to the best advantage. The beautiful golden-yellow flowers are produced on the young leafy stems and they measure about one inch and a half across.

The most useful and the best-known species is the old Dendrobium nobile. Even the smallest collection can boast of plants of this handsome Orchid. Among a number of plants of this showy species in bloom here, the variety named D. Sanderiana stands out conspicuously and seems one of the most distinct. It has magnificent flowers, large and very brilliant in color.

Botanic Garden, Harvard University. *Robert Cameron.*

Caladiums.

IT is not surprising that bulbs and other tuberous-rooted plants occupy so prominent a place in decorative gardening, for without these there would be a great loss of decorative material. Plants which accumulate nutriment for another year in bulbous or tuberous roots can be stored away during their resting season in a very small compass, and the advantage of this is obvious. It is necessary to prepare each year for considerable summer decoration, and at the same time provide space in the greenhouses for the growing of cut flowers. No plants are more useful for summer decoration than the fancy-leaved Caladiums. There has been quite a revolution in this class of plants since their cultivation was taken up in Brazil by skilled operators under the best possible conditions. At the World's Fair in Chicago an education was afforded by the fine examples of Caladiums seen there, and which showed brilliant colors and excellent cultivation, the fine effect being obtained in but a few weeks and continuing throughout the season. The newer kinds, to that time practically unknown to us, were made familiar, and these are no more difficult to grow than the older kinds of less brilliant coloring. We have fairly tested this new Brazilian set of Caladiums for several seasons. The cost is reasonable, and they are very effective. A set to be found in English nurseries surpasses them in one respect, that of dwarf habit. I am told that this habit was brought about by crossing the larger high-colored varieties with the dwarf red variety Caladium minus erubescens that we grow as a companion to C. argyrites. The resulting progeny is superb in coloring, dwarf in habit, and excessively high in price at present, but some day we hope they will be obtainable. Among other things we have noticed that the varieties that have foliage of pale color and thin texture, often without a trace of green in their composition, are also very sensitive to sunlight, and practically of no value for general decoration such as we need for terrace or piazza, and are of little use except in the greenhouse, owing, perhaps, to the lack of chlorophyll. But as conservatory plants they are very beautiful; the transparency of the leaves, through which it is possible to read a newspaper, gives them interest in a collection. The varieties of higher color are all that one could desire, and there are, I think, as many as sixty in all. We had the set complete at the start, but many of them were practically identical, and more were undesirable owing to the dull tints, and the original number is reduced consequently. But the distinctive character of the collection is due to the influence of this Brazilian strain. It is to be desired for us that are not Portuguese scholars that the raiser in future give to his infants names that could be pronounced by an Anglo-Saxon tongue. I shall not attempt to put the names in type here, for they can be seen at a glance in lists of Caladiums, and there is the consolation that the plants are at least as distinct as their nomenclature.

A few remarks about their cultivation to those who wish to try them: Caladiums are distinctly tropical, being found directly under the equator, and cannot be treated to too high a temperature, as we understand this particular in greenhouse work. It is in the manner of resting the tubers that many fail, but we always shake the tubers out of the pots in autumn and place them in the warmest part of the boiler-room, each kind being provided with a new label and placed in dry sand in small pots, or in such as are large enough to accommodate the tubers. In this way a large number may be stored in small space without the loss of a single individual, care being taken

when they are shaken out to clean all decayed portions away and to rub on a little charcoal-dust if there is any sign of decay. Since we have taken the precaution to place a handful of sand under the tubers at potting-time they have almost entirely escaped from the rot that used to give a great deal of trouble at their bases. To be of the most use to us Caladiums must be started early in the season, so that they shall be well grown in the early summer months and the foliage well developed and in a condition to stand exposure at that season. We start them early in the year for this reason, and this makes it possible to store them away under the benches at the time in fall when all plants must be got under glass, and the space occupied by a collection of Caladiums is needed for winter-flowering plants. This early start, therefore, gives us a twofold advantage. But those who have not a warm house commanding at least a temperature of sixty-five at night had better wait until later in spring, when it is attainable, for a good brisk heat is necessary to get a free growth of large well-colored foliage. Caladiums like a light rich soil. We add a large proportion of spent mushroom-bed material to a compost of leaf-mold and loam, made porous with plenty of sand, and later in the season, if necessary, liquid stimulant is given. The aim is to produce the greatest leaf-development, and, on the whole, it is easy to accomplish.

I am glad to find that there is an operator at work in Florida on this family of plants, and we have now in course of trial some two dozen or more varieties raised in that state, where they thrive outdoors with great vigor. It is not too much to expect that we may have in the near future a race of American Caladiums equal to those we have hitherto received from abroad.

South Lancaster, Mass. *E. O. Orpet.*

Plants for Conservatory and Window Garden.

Chorozema ilicifolium.—This elegant leguminous plant bids fair to become one of the most popular of its class. It forms a dwarf, globular bush when well trained, producing numerous few-flowered racemes of bright yellow flowers, tinted red, from March until late in summer. The leaves are about an inch long, dark green and leathery, with wavy, spiny-toothed edges, not unlike Holly leaves, but smaller. The branches are very slender; young plants should, therefore, be well pinched in order to form compact specimens. The variety "nana" is naturally dwarf and compact. The genus contains several other extremely showy and attractive plants, all of which flower later in the season than the preceding kind. One of the most beautiful of these is Chorozema cordatum, a species not uncommon in cultivation; the flowers are yellow, with reddish keel and produced in great abundance in drooping racemes; the leaves are cordate and spiny-toothed. C. Henchmannii is a rare scarlet-flowered species with acicular, spiny-pointed leaves. It flowers early in summer. C. diversifolium is a very showy plant with bright orange-colored flowers in numerous nodding racemes late in spring. C. varium has erect racemes of bright red and yellow flowers and cordate, somewhat spiny, leaves. The Chorozemas are easier to grow than most other New Holland plants; they will thrive in any moderately light and warm greenhouse or conservatory. In the conservatory they may be trained on pillars near the glass, in sunny positions. They are excellent house plants, too, rivaling Cytisus racemosus in usefulness for this purpose. Propagation by means of seeds is the simplest method of increasing them. The seeds should be sown as soon as ripe, in shallow boxes, in a compost of sandy loam and leaf-mold, which should be kept in a light but comparatively cool place in summer. The young seedlings must be transplanted early and pinched frequently during the first season. Older plants may be plunged in a cool frame in summer in a half-shady position. In potting the soil must be pressed firmly down around the roots, as a loose potting often proves fatal. Watering and spraying must be carefully attended to in summer, and the roots must on no account be allowed to become dry.

Imantophyllum cyrtanthiflorum.—This is a very valuable and floriferous spring-flowering plant of the Amaryllis family. Like the more common Imantophyllum miniatum, it has quite beautiful and attractive foliage, the leaves being long, dark green, slightly curving and distichous. The flowers are almost bell-shaped, of a very bright salmon color, produced in large, many-flowered corymbs, on scapes from two to three feet high. This is considered a hybrid between Clivia nobilis and the above-mentioned I. miniatum. It is best grown in large pots or tubs in which it is allowed to increase and form large masses of foliage. The compost should consist of rich fibrous loam, with a liberal addition of cow-manure and some sand. During the growing season plenty of water is needed, but the plants should never be allowed to dry as much as Hippeastrums, as they are ornamental throughout the year. The roots are fleshy, the plants form no bulbs, but increase readily by means of side-shoots or offsets which may be used for propagation. All Imantophyllums form ripe seeds if fertilized, and they may, therefore, be propagated with the greatest ease by this means.

Wellesley, Mass. *T. D. H.*

The Climbing Hydrangea.—We often hear complaints that Hydrangea scandens is tardy in starting to grow. The usual way of raising it is by layering. Numerous roots push out wherever the shoots touch the ground, in the same way as they do from the English Ivy, but when the layers are severed from the parent shoots and set out by themselves they scarcely grow at all for a year or two. Its near relative, Schizophragma hydrangeoides, behaves in the same way. It is becoming the practice to pot the layers when taken from the parent plant, and keep them in frames or in a cold greenhouse for a season; after this they may be set out with more certainty of thriving. Both of these vines are gross feeders, and they should be abundantly supplied with manure, especially when well started. It must not be forgotten that all climbers grow much faster when they are supplied with supports. The Climbing Hydrangea needs a rough surface, and when it once attaches itself it grows rapidly. Decumaria barbara, a closely allied climber, is not at all like the Hydrangeas in habit of growth, but from the start pushes on rapidly. Though a native of our southern states, it is perfectly hardy in Philadelphia and much farther north.

Germantown, Pa. *Joseph Meehan.*

Correspondence.

Ericas as Market Plants.

To the Editor of Garden and Forest:

Sir,—The festivals of Christmas and Easter are now two events of the first importance to the commercial florists, for at these times the demand for plants and flowers reaches its highest mark. Especially at the latter festival does there seem to be an almost unlimited outlet, especially as then the range of choice is much greater than it is in the dull weather of the early winter.

Naturally there are many would-be gleaners at the harvest, and every grower at this season exerts himself to produce his specialty in its finest form and greatest abundance. For the modern flower grower for the market is a specialist in very few plants. Competition has driven him to grow only those plants which he best understands and can grow to the greatest perfection or most economically.

Among the choicest plants grown for the market are the Ericas, or Cape Heaths, but often sold in the city shops as Scotch Heather. Not so many years ago Heaths were driven out of private greenhouses by the Orchids, and those beautiful plants are seldom or never seen in collections. As is well known, they require cultural skill of a high order, and only the softer-wooded kinds are now grown as market plants by a few specialists. Among the best growers of these plants in this locality is Louis Dupuy, a young Frenchman, whose houses are located on a warm southern slope in Whitestone, Long Island. There I found the other day Heaths in all stages, from cuttings to three-year-old plants, the mature ones ready for the Easter market in hundreds and, perhaps, thousands. Judging from the health and thriftiness of the plants here one might suppose them as easily grown as Geraniums if he did not know to the contrary. Like all good growers of plants, Mr. Dupuy has no cultural secrets. Learning his business on the Continent, Mr. Dupuy found, in undertaking the culture of Heaths here, that, like many other plants, they required different treatment in their environment, and he has broken away somewhat from the traditional practice so rigidly adhered to abroad. In the first place, they are potted in none of the fancy soil mixtures usually recommended in the books, but simply in good light soil, with plenty of sand, the local article, in fact. Of course, the successful culture of Heaths is a matter of careful, unremitting attention as to air and watering. I suppose the secret of Mr. Dupuy's success may be summed up in the sympathetic culture of each plant as an individual. I learned, also, that a light greenhouse is a poor place for Heaths. According to Mr. Dupuy's experience on both sides of the ocean, he gets as much growth from a cutting in one year here as is secured abroad in two, and his two-year-old plants are as large as European ones at three years old. The one-year-old plants here were very bushy and about nine inches

high, and in four and four and a half inch pots. This is the most popular size. Those unsold are cut down after flowering and grown on in six-inch pots, and make plants about eighteen inches high and as much through. This, of course, refers to the varieties now in flower, which are mostly Erica persoluta alba for white, and E. Mediterranea for pink. For Christmas there are grown here E. Wilmoreana, one known as E. nigra and E. gracilis vernalis. Even earlier there is a form of E. gracilis autumnalis, a favorite English variety. There were a few plants of E. cylindrica just coming on, which have large tubular corollas of a beautiful coral-color. According to recent investigations, Heaths and a number of plants naturally growing in soil rich in humus have their roots much modified, and flourish most successfully when their roots are covered by fungoid growths. This is given as an example of most important plant association, or the so-called symbiosis, as the mycelium of the fungus is said to act as the absorber of nutriment from organic matter instead of the usual root-hairs, which fail to develop in such cases. It will be noticed that Mr. Dupuy's potting-soil is not favorable to fungal development, but I brought a specimen plant away for examination of the roots. Under a microscope of high power it was seen that no parasites infested the roots of the plants, and the root-hairs were very abundant. This proves nothing against the scientific theory, but it does seem to prove that the Ericas have an adaptability not always suspected, and will grow perfectly in what might be considered unnatural conditions. The same painstaking care shown in the culture of Heaths was evident in all the plants on the place. There were fine dwarf plants of Hydrangea Otaksa, well-grown Lilies, Genistas (Cytisus), Azaleas, Spiræas, Daisies and a number of beautifully flowered Acacia armata, a plant of great distinction, leading to coveteousness. Mr. Dupuy also grows Carnations and hybrid Roses—Ulrich Brunner at the moment. Sweet Peas were grown cleverly in pots, a device rather novel, but useful, as they can be shifted about as space permits when the plants now crowding are cleared out.

Elizabeth, N. J. *J. N. Gerard.*

Farming on Vacant City Lots.

To the Editor of Garden and Forest:

Sir,—On reading your editorial on the cultivation of the vacant lots I was struck with the humanitarianism and practicability of this plan to help the now almost helpless poor. Apart from scientific aspects of the case, with which Garden and Forest chiefly has to do, the economics of such questions, particularly the relation of men to the soil, is a matter of supreme importance, on a proper adjustment of which the weal or woe of a country largely depends.

This might be illustrated by the almost uniform prosperity of settlers in new countries, where civilization barely begins, but where land is easily accessible, contrasted with the constantly recurring seasons of depression in the more densely settled countries where civilization attains highest development, but where land is not to be had except at exorbitant prices.

I would, therefore, urge the further discussion of this matter in the hope that, by a free exchange of opinion, a simple and, therefore, practicable plan may be evolved whereby the needy masses may be enabled to get access to the idle lands on terms which, without recourse to charity, will afford a proper recompense for their labor, security for their crops, and work no injustice to the owners of legitimate investments.

New York. *Luther G. Sand.*

To the Editor of Garden and Forest:

Sir,—Your editorial, "Farming on Vacant City Lots," is timely and interesting. The educational side of the scheme has a special interest for me, but chiefly in its politico-economic aspects, for it will help to explode Malthusian fallacies about overpopulation, restricting immigration, regulating hours of labor, limiting apprenticeship, and the like. The earth is large enough and fertile enough for ten or twenty times its present population, and the bringing together of idle hands and idle lands will alleviate this horrible poverty that festers in our great cities.

The assertion that "anybody who wants work can find it" is utterly false; I have "been there" myself. The Detroit plan proves that a large number, at least, of the very poor will work if they are given a chance at the land. This opportunity will be worth infinitely more to them than all the charity that wealth can offer. It will put them on their mettle and infuse into them the independence of true manhood.

Brooklyn, N. Y. *Stephen Bell.*

To the Editor of Garden and Forest:

Sir,—It seems to me that had the writer of the editorial in Garden and Forest given the same careful thought to the suggestion regarding the cultivation of vacant-lot gardens that has generally marked the discussion of technical subjects in that paper, his conclusions would have been different.

There is danger in this proposal; the scheme in my opinion is the entering wedge for land confiscation. Let the masses once realize that with free access to land they can make their own living; give them that free access in the name of charity, and it will not be long before the philanthropic features of the case will be forgotten, and access to land will be demanded as a matter of right, and questions of title between the state and the individual will be subjected to the same remorseless scrutiny and review as similar questions between individuals are decided now.

You see the danger to property owners? Even now the right of the landlord to ground-rent is being questioned, that right which may be roughly defined as a privilege to appropriate a part of the earnings of the labor which must use the land. Suppose lot owners allow the use of their land for a few years without recompense—in other words, charitably donate the rent to their tenants—a time must necessarily come when rent will have to be collected or the lots vacated. Is it likely that the people who have "squatted" on the property for years will pay or quit without trouble? Besides their unwillingness to give up part of their earnings to the landowner, is it not probable that their husbandry, presupposing it successful, will have created a powerful public opinion antagonistic to the landowners, as such?

While it cannot be denied that some beneficial results have to be credited to the experiment at its present stage, there can be little doubt that these are due to exceptional circumstances. I believe it is not claimed by its originators that the "potato-patch plan" is a panacea; and their moderation in this respect is justified by every feature of the case. Nothing short of renting the land at a fair valuation will enable the tenants to maintain their self-respect; and in case advances are made for seeds, living expenses, etc., the security usual in such cases should be given to the lender. No other plan will meet the exigencies of the case and remove all fear in the future of a dangerous spirit of independence among the classes whose necessities are now the object of philanthropic solicitude.

New York. *Gregory Smith.*

Exhibitions.

Boston Flower Show.

At the exhibition of spring flowers given in Boston last week by the Massachusetts Horticultural Society the three most interesting features were, first, a collection of Persian Cyclamens from the gardens of Mr. N. T. Kidder, of Milton. The plants were exceptionally well flowered, with abundant foliage and large clear-colored flowers of good substance. Better-grown and more beautiful plants, perhaps, have never been produced, although a large and evenly grown collection of the same plants were shown by Mrs. B. P. Cheney, of Wellesley. Second, a plant of the Japanese Crimson Rambler Rose, two years from a graft, grown by Mr. Jackson Dawson, of the Arnold Arboretum. The plant was five feet six inches high and almost as deep through, covered to the pot with healthy foliage and with more than a hundred clusters of flowers. Whatever may be said of the beauty of this variety, which some people think less attractive than the single white-flowered Rosa multiflora, from which it has sprung, or than the hybrid Dawson Rose, this specimen shows its possibilities as a pot-plant for winter or spring decoration. The flowers are of a glowing color, which outshone that of the Indian Azaleas near it, and under electric light it was still more lustrous. The society's silver medal was awarded to this plant. The third striking feature was a well-grown plant of the Australian Acacia Drummondii, about eight feet high and five or six feet through, exhibited by Dr. Charles Weld, of Brookline. This also received the society's silver medal. Other noticeable exhibits were the Catherine Mermet Roses shown by Mr. William H. Elliot, of Brighton, and the fine hybrids by David Nevins, of Framingham, and a collection of hardy shrubs forced at the Bussey Institution and exhibited by Mr. Charles Dawson, who is exceptionally successful in the management under glass of early spring hardy flowers. Among these were Andromeda Japonica, A. floribunda, A. polifolia, A. speciosa, Daphne Cneorum, Leucothoë Catesbæi and a peculiar Gorse, Genista Germanica.

Notes.

The *Ceylon Forester* gives the dimensions of a Banyan-tree at the Admiralty House at Trincomalee, the girth of whose central trunk is nineteen feet six inches at three feet from the ground, the full height of the tree being sixty-six feet and six inches, and the circumference of the circle shaded by its foliage being 541 feet.

At the recent meeting of the Massachusetts Fruit-growers' Association at Worcester it was stated that the canning of good apples was constantly on the increase in obedience to a steadily growing demand for them, especially abroad, Great Britain alone last year having taken 20,000 dozen. The canned product is so attractive that the demand for evaporated apples is diminishing.

Some experiments made in Belgium recently tend to throw doubt upon the truth of the assumption that insects are guided to flowers by the brightness of their colors. Brilliantly colored Dahlias were covered so as to expose only the disks, and butterflies and bees sought these flowers with the same eagerness and frequency as those which were fully exposed. The conclusion by Plateau was that the insects are guided more by their sense of smell than by their perception of the bright colors.

A Buffalo correspondent writes that he finds Linum (Reinwardtia) trigynum one of the best of the few window plants which flower in early winter—that is, before ordinary bulbs are brought forward. Beginning with the last of November the Linum will rival the Chinese Primrose in profusion of bloom, and if the two are placed together in a cool window where the temperature is kept above actual freezing the golden yellow flowers of the Linum will appear to admirable advantage among those of the Primroses, and both will keep on flowering until late in February.

Mr. Joseph Meehan writes to confirm what we have stated about the shy way in which Magnolia Kobus blooms when young. He speaks of a beautiful specimen in Germantown with a trunk four feet in circumference at a foot from the ground, just below its separation into several large limbs. The tree is twenty-two feet high, with a spread of twenty feet across, and very symmetrical in shape. This tree has flowered as yet but very little, although it is doing so more freely every year. Large as it is, he thinks it carries no more than a hundred flower-buds this spring, while a tree of M. conspicua of the same size would have thousands. The flowers are not large and the buds at present are not more than one-third the size of those of M. conspicua.

Green peas have recently been shipped from Florida in comparatively large quantities, this vegetable, with mint, being in more especial demand as an accompaniment to spring lamb. Seventy-five cents a half-peck is the current price. Tender and fresh-looking string-beans, also from Florida, sell for twenty-five cents a quart, and some late okra, from Louisiana, costs ten cents a dozen. But little cauliflower is coming from Florida, and the dependence has been on the California supply, which finds ready sale at twenty-five cents a head, a limited quantity from France selling for sixty cents. Boston hot-house cucumbers sell at fifteen cents each, and mushrooms from Long Island and New Jersey at ninety cents a pound. Large stalks of asparagus, as fine as any grown in northern gardens later in the season, are now coming from South Carolina, and sell for sixty-five to ninety cents a bunch. Egg-plants from Florida and Cuba cost twenty-five to thirty cents each, and celery, from Florida and California, $1.25 for a dozen stalks. Beets are coming from Florida and the Bermudas, and other field crops arriving from these islands are kohl-rabi, carrots, onions, potatoes, parsley and Romaine lettuce. Tomatoes from Florida and Key West cost twenty-five cents a pound, and the near-by hot-house product thirty-five to fifty cents. Other new-crop vegetables now in market are white squashes and cabbage from Florida, and lettuce from Florida, Louisiana and South Carolina. Some of the first-class fruit and vegetable stores now include in their varied stock yams, from the Bahamas. These rough-skinned, irregularly shaped tubers find not a few curious purchasers, fifteen cents a pound being the price asked for this popular food of the West Indian negroes.

The sales of cut flowers during the Lenten season, which closes with this week, have been more satisfactory to the dealers than in former seasons, and informal dinner and theatre parties have made considerable demands until now, in Holy Week, when but few flowers are sold. While there have been not a few muggy days during the weeks when plants and flowers have been forced for Easter, the weather, altogether, has not been unfavorable, and the quality of flowers is, perhaps, higher than ever before. To growers whose stock is developed to the point of hardening off sunless days are now comparatively harmless, though a hindrance to any whose plants are belated in development. The uptown flower-stores began on Monday to receive their Easter stock. Lilies, as usual, are most conspicuously associated with the season, and after these azaleas are most abundant. Acacias are among the most popular plants, as are Heaths, the light-colored Erica gracilis and the rich pinkish lavender of the more densely flowered E. globosa being varieties frequently seen. Among the newer and rarer offerings of this season are Asparagus Sprengeri, luxuriant drooping plants of which, in ten-inch pots, are offered at $4.00. Spiræa compacta is evidently supplanting the old S. Japonica, the larger and denser flower-trusses of the former proving much more durable. Genistas are somewhat less generally grown than formerly, due to the fact that the flowers fall so soon, a complaint also made against the still less popular Hydrangeas, which are specially susceptible to injury from lack of water. In cut flowers carnations are remarkably fine this season, and it is said by expert buyers that ten good flowers are obtainable this year for one a season ago. Helen Keller is just now the most expensive variety, costing one-third more than William Scott and other standard sorts. In roses, Meteor, Bridesmaid, Bride, American Beauty and Mrs. Pierpont Morgan are the favorites in this order, and Baroness Rothschild, Merveille de Lyon and extra-fancy buds of American Beauty have a demand of their own at prices as high as $18.00 a dozen. The greatest novelty is, perhaps, Moss Roses, dainty plants appearing in one of the Broadway window displays, while small sprays, each carrying a delicate bud, are more frequently seen. Sweet peas, lilacs, Poet's narcissus, forget-me-nots, gardenia and Cape jessamine appear in all the collections.

Firm, well-grown and richly colored strawberries are now quite plentiful, a well-packed quart box costing sixty-five to seventy-five cents, while the more delicate berries from hot-houses near Hackensack, New Jersey, cost $1.50 for the same quantity. Grape-fruits from Jamaica, carefully carried over in cold storage, bring fifty cents each, and selected Navel oranges from California sell for $1.00 a dozen. New limes from Jamaica, small and not fully colored, cost $2.50 for one hundred, and the first new-crop Jamaica oranges have already followed upon the old crop. While not fully matured, these are in demand at $4.50 to $8.00 a barrel in wholesale lots. A few tangerines are still shown in collections of citrus fruits. Fresh-looking Catawba grapes, covered with bloom, cost so late in the season but thirty-five cents for a three-pound basket, and heavily shouldered bunches of Almerias, with rich pink coloring, sell at fifty cents a pound. The first native-grown Black Hamburg grapes, from Pennsylvania graperies, now command $5.00 a pound, and large bunches of immense berries of Gros Colman, cut with a piece of the woody vine, are a luxury at the same high price. These come from the Isle of Wight. The staple apples seen in the wholesale markets are Roxbury and Golden Russets, Baldwin, Ben Davis and Greenings, these ranging in cost from $2.50 to $4.25 a barrel to dealers. In fruiterers' collections Ben Davis apples sell at sixty to seventy-five cents a dozen, and Newtown pippins at seventy-five cents to $1.00. A showy red apple, known as Willow Twig in the trade, is of more delicate coloring than the Baldwin and resembles Northern Spy in its crisp and juicy quality. A few bright-cheeked Lady apples are carried over for use in making up fancy baskets of fruits. Winter Seckel, Winter Nelis, Forelle, Easter Beurre, P. Barry and the large Acme pears are offered at seventy-five cents to $3.00 a dozen. The best shops include, besides fresh fruits, attractive and varied displays of nuts and of preserved fruits. Among many sorts of nuts that may now be had are large Pecans from Texas, American filberts, English cob nuts in their hulls, Paradise and Souari nuts from South America, large Italian chestnuts and the so-called Lychee nuts, besides the commoner domestic nuts, whole and skillfully shelled. The array of preserved fruits is almost endless, and olives of many sorts and sizes, from tiny, bean-shaped Crescents to large oval Queens; maroons, crystallized ginger, crystallized fruits from France, and crystallized semi-tropical fruits from California; layer and pulled figs and the candied product, the familiar Fard dates, besides a section of the stem thickly set with this fruit, each in a fancy box, and dates stuffed with Pecans; German prunes, in pound boxes, costing sixty cents, and large, meaty French prunes, in jars holding two pounds, for $1.00; Guava and other domestic and imported jellies, including Japanese and Indian preserves, are a mere suggestion of the tempting and wholesome stock.